internet flow

Manage others' access to your data as it wends its way through cyberspace

How does your internet activity make it across the globe? **It makes a series of hops across routers with no affiliation to you or the site you're connecting with.** With no special measures, here's how you look to them:

> HEAD
> From: Alice
> Location: Philadelphia
> To: shoppingsite.com

> BODY
> username: *alice1997*
> password: *ducksRcool*
> message:
> *I would like these books please! Here's my credit card number:*
> *0123 4567 8901 2345*

So what steps can you take to protect yourself?

HTTPS

HTTPS is a protocol on top of HTTP that uses encryption to hide the *body* of traffic. Whoever builds a site can enable it to use HTTPS, but you can take steps to stay secure:

> HEAD
> From: Alice
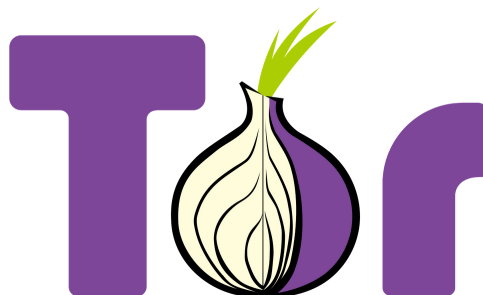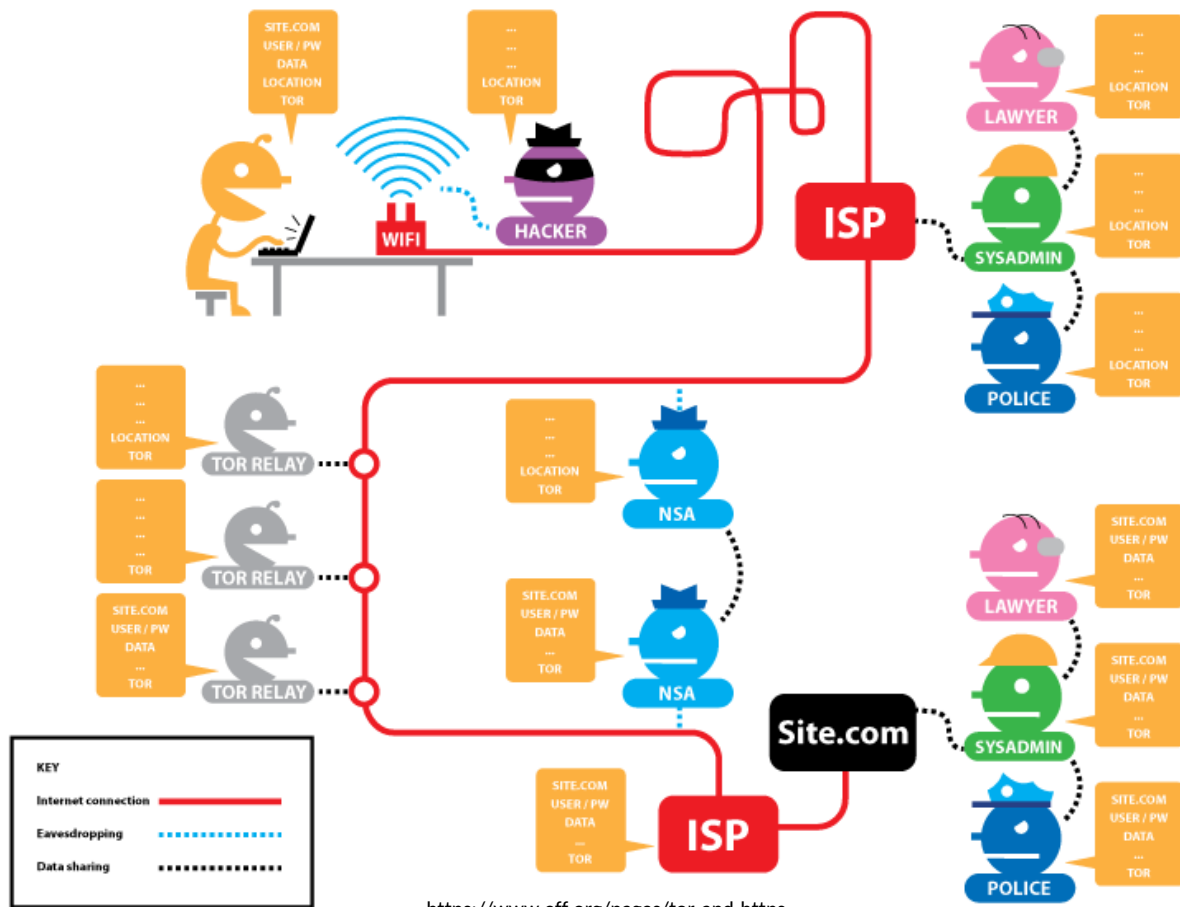> Location: Philadelphia
> To: shoppingsite.com

> BODY
> TXR]DMvq iDUU47Ed k$C5z?rG i<L{G95s V,+ {!Sfb 7a~T**LK 91:PM<};)Y{R=O/@ 6b.@6rhc 3^Gg]a"O #81%SPP5 b72Yk/LS 93fvUYR} JOu_}E(l SlYp#y:D H`O6{"qh K.

- Look for the lock icon next to the web address in your browser - this indicates that HTTPS is being used.
- You can find browser extensions that require sites to use HTTPS if they are able.
- **Never send sensitive form data except through HTTPS**

Onion Routing

Onion routing is a means of using *layered* (like an onion!) encryption so that a sender can't be tied to a receiver by any observer.

- Three random steps are taken through a volunteer router network, with each router only knowing who comes immediately before and after them.
- Onion routing obscures your location, even from the recipient
- Download and use the free browser **TOR (The Onion Router)**

https://www.eff.org/pages/tor-and-https

Onion Routing + HTTPS

Even with onion routing, if you're using HTTP, the final router sends your data in plaintext - anyone sniffing it can read your sensitive information.
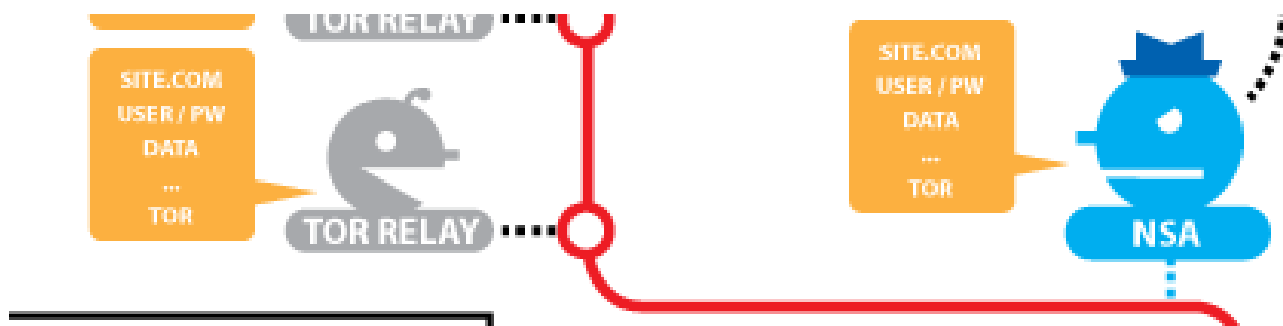
But as long as you're interacting with a site that uses HTTPS, you can use HTTPS simultaneously with TOR. This protects your data until it reaches the site you're talking to.

HEAD
From: Alice
Location: Philadelphia
To: FWD to Bob

BODY
TXR]DMvq iDUU47Ed
k$C5z?rG i<L{G95s V,+
{!Sfb 7a~T**LK
91:PM<};)Y{R=O/@
6b.@6rhc 3^Gg]a"O
#81%SPP5 b72Yk/LS
93fvUYR} JOu_}E(l
SlYp#y:D H`O6{"qh K.

What the first router sees

HEAD
From: FWDed from Dan
Location: ?
To: shoppingsite.com

BODY
username: *alice1997*
password: *ducksRcool*
message:
I would like these
books please! Here's
my credit card
number:
0123 4567 8901 2345

What the last router sees
(with HTTP)

HEAD
From: FWDed from Dan
Location: ?
To: shoppingsite.com

BODY
TXR]DMvq iDUU47Ed
k$C5z?rG i<L{G95s V,+
{!Sfb 7a~T**LK
91:PM<};)Y{R=O/@
6b.@6rhc 3^Gg]a"O
#81%SPP5 b72Yk/LS
93fvUYR} JOu_}E(l
SlYp#y:D H`O6{"qh K.

What the last router sees
(with HTTPS)